UNILATERAL TEMPOROMANDIBULAR JOINT ANKYLOSIS IN A YOUNG PATIENT –CASE REPORT

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Abstract
The temporomandibular joint (TMJ) is one of the imperative functional joint of the human body. It comprises of mandibular condylar process, glenoid fossa of the temporal bone, articular disc and fibrous capsule. It is affected by many pathological conditions and other systemic diseases. TMJ ankylosisis isone such condition affecting the joint and functions.It is defined as a fibrous or bony union of the anatomic components of TMJ associated witha restricted mouth opening, difficulties in mastication and speech and maintenance of oral hygiene as well as adverselyaffecting the growth of the mandibleresulting in facial disfigurement. Here we review areport of left TMJ ankylosis in a pediatric patient.
Keywords: Temporomandibular joint, Ankylosis, Mandibular hypomobility, Pediatric patient.

Introduction

The temporomandibular joint (TMJ) is a synovial type of diarthrodialjoint which can produce both rotational andtranslatory movements. The bones involved in the articulation of the lower jaw with the cranium and upper facial skeleton are the squamous part of the temporal bone and the condylar head of the mandible and the joint therefore is designated the TMJ. The joint is unique to mammals. It is divided into upper and lower compartment by an articular disc.TMJ development takes place between the 7th and 20th week of intrauterine life. TMJ is affected by numerous disorders which may be developmental or acquired.

The term “Ankylosis” is derived from Greek word which means “stiff joint”.Ankylosis is defined as “inability to open mouth due to either a fibrous or bony union between the head of the condyle and glenoid fossa”.[1]TMJankylosis is a malady that resultsin limitation of the mouth opening from partial reduction or hypomobility to complete immobility. The most important causative factorfor ankylosis is trauma, other causes include local infection, and systemic diseaseslikeankylosing spondylitis or rheumatoid arthritis.[2]This condition causes misery to patients mainly young adults as it undesirably affects the mandibular growth resulting in facial disfigurement, hypomobility of jaw which inevitably leads to poor nutrition, speech impairment, and psychological stress.[3]

Case Report

An 11-year-old female pediatric patient reported to the authors’ institutewith the chief complaint of difficultmouth opening since 2 years.History of present illness revealed trauma to the left region of mouth 2 years back. Following trauma, the patient started complaining of a decrease in mouth opening which gradually attained the present stage. Decreased mouth opening was associated with difficulty in eating, swallowing, and speech with no reliving factors. Extra-oral examination revealed facial asymmetry with retrognathic mandible and prominent antegonial notch on the left side atthe inferior border of the mandible (Figure 1).

Figure1: Lateral profile of patient

The patient showed minimal mouthopening of less than 2mm and lips were incompetent. Intra-orally restricted mouth opening was present (Figure 2).

Figure 2: Extra-oral Presentation

The patient was moderately nourished and poorly built at her age. By considering the clinical features it was provisionally considered as the ankylosis of TMJ. Later patient was subjected to complete hemogram and radiographic examination. A complete hemogram revealed as normal with raised ESR and reduced hemoglobin percentage. Radiographic examinations comprised of OPG and CT scan. The OPG showed complete obliteration of left joint space by an osseous component and loss of anatomy of condylar head and

glenoid fossa (Figure 3). Advance imaging with CT scan showed that there is bony fusion between the left condylar head and the condylar head and articular fossa extending upto the sigmoid notch. Definite morphological alteration was noted. The left TMJ space was obliterated with bony deposition (Figure 4, 5). Based on the radiological features it revealed the TMJ ankylosis of left side.

Figure 3: OPG showig obliteration of left joint space

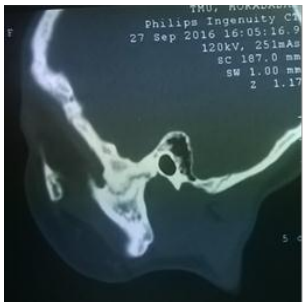

Figure4: Sagittal section of CT showing union of left TMJ

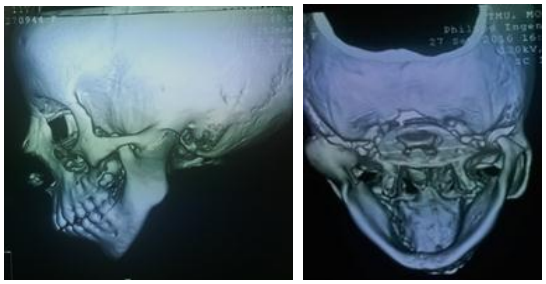

Figure 5: 3D section showing ankylotic component

Discussion

TMJ is a unique, complex, bilateral diarthrodial synovial joint which provides both hinging (ginglymoid joint) and gliding movement (arthroidial joint). An array of disorders affecting TMJ embraces number of clinical conditions that involves the bony component of the joint, muscles of mastication and related structures.[4]

TMJ ankylosis is one of the ailments associated with the disease progression resulting in bony or fibrous union of condyle and articular fossa which causes reduced mouth opening to complete immobility of jaw. In young patients, it impairs the mandibular growth and development which causes undesirable influence on the psychosocial development of the patient, due to the facial distortion. It get worse with age and is accompanied with speech impairment, difficulty in mastication, poor oral hygiene, periodontal disease, malocclusion, altered growth of maxilla and mandible and compromised airway causing sleep apnea.[5,6]

Kazanjian (1938) classified ankylosis of TMJ according to location into a:Intra-articular or true and b:Extra-articularor false ankylosis. On the basis of type of tissue involved it can be divided into fibrous, fibro-osseous andbony and based on extent of fusion it may be complete or incomplete.[7] A system of grading of TMJ ankylosis was proposed by Sawhney (1986) which is as follows Type I: extensive fibrous union around the joint, Type II: Formation of bony bridge between the glenoid fossa and condyle but no fusion within the medial area of the joint. Type III: bony bridge between the mandible and the glenoid fossa. Type IV: The entire joint architecture is replaced by a bone with fusion of condyle, mandibular notch and coronoid process to the temporal bone.[6]

Most common etiological factor in the development TMJ ankylosis is trauma followed by infections, inflammatory conditions and underlying systemic diseases such as rheumatic arthritis. Trauma to the mandible results in intra-capsular hematoma formation, heamarthrosis and scarring with result antankylotic mass formation.[6]

Various treatment modalities available for TMJ ankylosis are gap arthroplasty, interpositional gap arthroplasty, condylectomy and ramus osteotomy,[8,9]In inter-positional gap arthroplasty many prosthetic material are available for TMJ reconstruction, which includes skin, dermis, temporalis fascia ,buccal pad of fat, Silastic sheet, autogenous costochondral graft, free vascularized whole-joint transplants, condylar prosthesis, custom articular fossa implants, , and mandibular reconstruction plates with condylar heads.[9,10]TMJ ankylosis treatment requires early surgical intervention, sumptuous resection followed by early mobilization and aggressive physiotherapy.

Kaban et al (1990) proposed a seven step protocol for treatment of TMJ ankylosis which includes: aggressive resection of the ankylotic mass, ipsilateral coronoidectomy, contralateral coronoidectomy when required, lining the joint with temporalis fascia or cartilage, reconstruction of the ramus with a costochondral graft, rigid fixation and early mobilization with aggressive physiotherapy.[11]

In young patients, early treatment should be done as soon as the condition is recognized, with the main aim to re-establish proper joint function. Surgical intervention is a logical solution for TMJ ankylosis treatment using inter-positional gap arthroplasty followed by early active and long term physiotherapy to prevent re-ankylosis. Thus, immediate treatment is essential to reinstate proper growth and function of mandible and to assist in building up of optimistic psychology of the childern.[12]

Conclusion

TMJ ankylosis should be treated as soon as it is diagnosed specially in young children because of the subsequent hypo mobility, undesirable mandibular growth resulting in facial asymmetry and brings a psychological stigma for the growing children. Complete clinical and radiographic examination with detailed history helps in diagnosis, followed by immediate surgical intervention, early mobilization and physiotherapy may help to reinstate the, mental, physical and emotional health of the young patient.

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